

**WHAT IS CLAIMED IS:**

1. A composition comprising an isolated *Bacillus* strain, wherein said strain (a) produces lactic acid, (b) has an optimal growth temperature of in the range of 20-44<sup>0</sup>C, and (c) grows in a pH range of 2-5.
- 5 2. The composition of claim 1, wherein said strain produces L(+) dextrorotatory lactic acid and produces spores resistant to temperatures of up to approximately 90<sup>0</sup>C.
- 10 3. The composition of claim 1, wherein said strain is selected from the group consisting of *Bacillus coagulans*, *Bacillus stereothermophilus*, *Bacillus thermoacidurans*, *Lactobacillus sporogenes*, *Bacillus smithii*, *Bacillus dextrolacticus*, *Lactobacillus cereale*, and *Bacillus recemilacticus*.
4. The composition of claim 1, wherein said strain is *Bacillus coagulans*.
5. The composition of claim 1, wherein said strain is selected from the group consisting of *Bacillus coagulans* GBI-1, *Bacillus coagulans* GBI-20, *Bacillus coagulans* GBI-30 and *Bacillus coagulans* GBI-40.
- 15 6. An extracellular product derived from the composition of claim 1.
7. A composition comprising an isolated *Bacillus* strain, wherein said strain produces lactic acid and has an optimal growth temperature of in the range of 20-25<sup>0</sup>C.
8. The composition of claim 7, wherein said strain produces L(+) dextrorotatory lactic acid and produces spores resistant to temperatures of up to approximately 90<sup>0</sup>C.
- 20 9. The composition of claim 7, wherein said strain is selected from the group consisting of *Bacillus coagulans*, *Bacillus stereothermophilus*, *Bacillus thermoacidurans*, *Lactobacillus sporogenes*, *Bacillus smithii*, *Bacillus dextrolacticus*, *Lactobacillus cereale*, and *Bacillus recemilacticus*.
10. The composition of claim 7, wherein said strain is *Bacillus coagulans*.
- 25 11. The composition of claim 7, wherein said strain is *Bacillus coagulans* GBI-20.
12. An extracellular product derived from the composition of claim 7.

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13. A composition comprising an isolated *Bacillus* strain, wherein said strain produces lactic acid and has an optimal growth temperature of in the range of 25-35 °C.
14. The composition of claim 13, wherein said strain produces L(+) dextrorotatory lactic acid and produces spores resistant to temperatures of up to approximately 90°C.
- 5 15. The composition of claim 13, wherein said strain is selected from the group consisting of *Bacillus coagulans*, *Bacillus stereothermophilus*, *Bacillus thermoacidurans*, *Lactobacillus sporogenes*, *Bacillus smithii*, *Bacillus dextrolacticus*, *Lactobacillus cereale*, and *Bacillus recemilacticus*.
16. The composition of claim 13, wherein said strain is *Bacillus coagulans*.
- 10 17. The composition of claim 13, wherein said strain is *Bacillus coagulans* GBI-30.
18. An extracellular product derived from the composition of claim 13.
19. A composition comprising an isolated *Bacillus* strain, wherein said strain produces lactic acid and has an optimal growth temperature of in the range of 35-40 °C.
- 15 20. The composition of claim 19, wherein said strain produces L(+) dextrorotatory lactic acid and produces spores resistant to temperatures of up to approximately 90°C.
21. The composition of claim 19, wherein said strain is selected from the group consisting of *Bacillus coagulans*, *Bacillus stereothermophilus*, *Bacillus thermoacidurans*, *Lactobacillus sporogenes*, *Bacillus smithii*, *Bacillus dextrolacticus*, *Lactobacillus cereale*, and *Bacillus recemilacticus*.
- 20 22. The composition of claim 19, wherein said strain is *Bacillus coagulans*.
23. The composition of claim 19, wherein said strain is *Bacillus coagulans* GBI-40.
24. An extracellular product derived from the composition of claim 19.
- 25 25. A method of inhibiting a pathogenic bacterial infection, comprising contacting an infected site with the composition of claim 1.
26. A method of inhibiting a pathogenic bacterial infection, comprising contacting an infected site with a *Bacillus coagulans* composition.
- 25 27. The method of claim 26, wherein said infected site is in the gastrointestinal tract.

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28. The method of claim 26, wherein said infected site is skin or a mucous membrane.
29. The method of claim 26, wherein said composition comprises a viable vegetative bacterial cell.
30. The method of claim 26, wherein said composition comprises a bacterial spore.
- 5 31. The method of claim 26, wherein said compositions comprises an extracellular product of *Bacillus coagulans*.
32. The method of claim 26, wherein said composition is administered at a dose of 10 milligrams to 10 grams per day.
33. The method of claim 29, wherein said composition is administered at a dose of  $1 \times 10^2$  to  $1 \times 10^{14}$  viable vegetative bacterial cells per day.
- 10 34. The method of claim 30, wherein said composition is administered at a dose of  $1 \times 10^2$  to  $1 \times 10^{14}$  spores per day.
35. The method of claim 26, wherein said composition is administered orally, buccally, topically, vaginally, nasally, ocularly, or otically.

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